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The Theory and Practice of Scientific Management. By C. BERTRAND THOMPSON. Boston, Houghton Mifflin Company, 1917. —vii, 319 pp.

In this volume Mr. Thompson presents in revised edition several articles first published between 1914 and 1916 in the *Quarterly Journal of Economics.* The original articles are here supplemented by a biographical sketch of Frederick Winslow Taylor, and a bibliography—very extensive and well classified — of books and periodical contributions on scientific management.

The book is in the main a friendly but careful criticism of the manner in which the various features of scientific management have worked out in practice, together with speculation as to what are likely to be the ultimate consequences of the system for economic life. In general scope similar to Professor Hoxie's *Scientific Management and Labor,* it yet differs radically from the latter in method of approach and consequently in conclusions. Hoxie seems to have been greatly surprised, if not taken off his feet, by the diversity of schools and the variations in quality that have characterized or masqueraded under the name of scientific management; Thompson avoids this issue by confining his analysis to the work of the small group of consulting engineers (not more than twenty) who constitute the center of the movement in this country, and represent its better ideals. Hoxie also found it impossible to reach other than disagreeable conclusions, because he compared scientific management with that ideal labor program which he carried in his mind but which no industrial practice has yet reached. Thompson is more matter-of-fact and judges the new management wholly on the basis of its advances or backslidings as compared with current practice.

The story of scientific management as written from this point of view is shown to be a record of substantial progress. It is true that some of its tenets exist only on paper. Thompson renounces any claim to unusual skill or method in selecting employees, and states that he knows of no scientific study of fatigue. Other features of scientific management are said to vary a great deal in the thoroughness with which they have been applied in different plants—for instance, time study, instruction cards, and routing. But notwithstanding this unevenness of method, he finds that in most cases the introduction even of an abridgment of the system has been valuable. Manufacturers will not give net financial figures, but it is known that in machine shops the output has commonly been increased twofold or threefold, and on hand work between 60 and 100 per cent. On miscellaneous machine work the increase has usually been not quite so large. It is worth noting, however, that about one-third of the installations with which Thompson is familiar are listed as failures.

But what of the effects of scientific management on labor? Accusations as to overwork the author regards as answered satisfactorily by the numerous investigations which have been made along this line. Of the influence of specialization upon the intelligence and opportunities of workmen he says that "unfortunately skill is still sometimes confused with variety of attainment." Scientific management, however, provides the workman with a "measurable and demonstrable skill, one of the effects of which is to tone up his standard and make him dissatisfied with a hazy versatility which is unaccompanied with real skill in any detail." This genuine skill is the best basis for real invention on the part of the workman. The interest of the workmen "extends beyond their own work to that of the management." Inasmuch as the success of the worker depends partly on the smoothness with which the administrative department is conducted, it is common to see "workmen reminding their 'bosses,' in no uncertain terms, of their failure to live up to their managerial responsibilities."

Scientific management, in fact, is not autocracy, but democracy. "An industry which is governed by facts rather than by traditions and opinions is fundamentally democratic, at least in the sense that it is immaterial whether the fact is produced by the general manager or the humblest lumper." It "is a step in advance from the current type of arbitrary personal control." Scientific management, however, is opposed to the type of democracy which considers any degree of restriction of individual liberty undesirable. There must be control by some one, and the leaders should be chosen neither by the rank and file of employees, nor through arbitrary selection by owners and managers. "Scientific management provides a method of selection by capacity. In other words, its type of government is that of an aristocracy of demonstrated ability, tempered by the necessity of retaining the good will of employees without which the methods of scientific management cannot be successfully operated." In theory the author seems to favor the collective bargain, but he believes that industrial unionism must take the place of craft unionism if labor organization is to survive under the new conditions.

While much might be said in criticism of a "democracy" in which motivation and control are still in the hands of a limited class, Thompson's clear statement shows that as a system of administration scientific management marks a democratic gain. Other illuminating discussions take up the effect of scientific management upon the entrepreneur, upon unemployment and inequality of income, upon wages, the bonus, and the cost of living. On these topics, and every other subject that he touches, the author writes as one who has for some time made an exceptionally thorough and intimate study of scientific management and has yet retained for the most part the unprejudiced attitude of the teacher of economics. His book will do much to replace with a sounder appreciation of the actual facts the loose notions that come from popular reading or uninformed criticism.

The chief drawbacks of the book as a complete statement grow out of its composite character and the fact that it was impossible for the author to bring it in a large way down to date. It is a series of essays rather than a systematic presentation of the theory or principles of scientific management, and the various chapters are not perfectly co-ordinated. Though Thompson professes to measure very minutely the extent of the influence of scientific management, he makes no mention of the great wave of interest in the matter which swept over Europe soon after the outbreak of the war; and the book was unfortunately issued just too early for it to contain a hint of the extent to which the same principles are being introduced into the military establishment of the United States. Though a revision of the statistics and an expansion of the bibliography have been made, the spirit is still that of the author's earlier articles. But both the world at large and scientific management itself have in the meantime been rapidly changing.

HORACE B. DRURY.

UNIVERSITY OF CALIFORNIA.

History of Transportation in the United States before 1860. Prepared under the direction of BALTHASAR HENRY MEYER by CAROLINE E. MACGILL and a staff of collaborators. Washington, Carnegie Institution, 1917.—xi, 678 pp.

This work was preceded by a number of monographs (several of them published), which "with several indexes, collections of notes, and partially completed manuscripts," were, according to the preface by Dr. Meyer, "placed in the hands of Miss Caroline E. MacGill . . . . for elaboration into book form. . . . . This volume must be viewed as a contribution rather than as a completed study. It seemed much better to utilize as far as possible all of the material which the